



The iGEM team, with three nanobiology students: Céline, Tessa and Liza!

This year, nine girls and one guy form the new TU Delft iGEM-team, called 'Opticoli'. International Genetically Engineered Machine is a competition in synthetic biology: you may come up with any project you want, as long as it is in this field of expertise. At the end of the summer 300 teams from over the whole world, including us, will present their project in Boston, USA!

This year, we will be making lasers and biological lenses using *E. coli*. Making fluorescent cells is easy, but how do you make a cell shoot a laser? We will achieve this in two ways. First of all, we will express a protein called silicatein, which will synthesize a layer of polysilicate, which is basically glass, around the cell wall. Secondly, we will express genes for the synthesis of intracellular polymers in the cell. This way, when you express a fluorophore, the photons do not leave the

cell, but keep bouncing off at the cell walls and excite other fluorophores.

Consequently, a stronger beam of light arises with only one wavelength: a biolaser. Also, using the silicatein, we want to make biological lenses that can act as a microlens. The most important question is: why do we want to do this? The goal with the *E. coli* lasers is to improve the imaging techniques and resolution for single cell imaging and multicellular communities. With the biological lenses we aim to produce sustainable and lightweight lenses that can be used in e.g. smartphones or solar panels. In this way, the current expensive lenses can be replaced, which makes research cheaper and easier to access for everyone. We will be the first people to make such a biolaser and the biological microlenses, which is of course very cool!

The iGEM team ■

If you want to know more about this awesome project, you can follow us on Facebook (TUDelft iGEM), Instagram (@igemtudelft) and our website: 2016.igem.org/Team:TU_Delft.

